



When Behavioral Barriers Are Too High or Low: How Timing Matters for Parenting Interventions

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OVERVIEW

This study compares the effects of a text-messaging program sent to parents of preschoolers during the weekend to the same program sent on weekdays. We find that sending the text messages, aimed at building pre-kindergarten skills, on the weekend is, on average, more beneficial to children's literacy and math development. This effect is particularly strong for initially lower achieving children, while the weekday texts show some benefits for higher achieving children on more advanced skills. These results are consistent with a hypothesis that parenting supports [may] work better when tailored to the populations they serve. Our findings provide evidence that parenting programs work best when parents have time, attention and need.

BACKGROUND

The time children spend with their parents affects their development, and parenting programs can help parents use that time more effectively. However, most parenting programs have shown only limited success, perhaps because they ask parents to absorb large amounts of material at preset times, such as during a few intensive evening classes. These programs focus on delivering information, but do not provide parents with the ongoing reinforcement, encouragement, and advice that they need to establish productive parenting practices.

Recently, text-messaging interventions have emerged as a promising approach in assisting parents to help their children build necessary skills. Unlike traditional parenting programs, texting programs are delivered throughout the school year, break down complex concepts into small bits of useful advice, delineate easy-to-achieve skill-building activities, and offer regular encouragement. Further, these

KEY FINDINGS

- We do not find statistically significant differences in literacy gains for the three treatment groups, but do find that children who start the year in the lower half of the literacy distribution benefit more from a text program delivered on weekends.
- For achieving improved math outcomes, a text program delivered on weekends is significantly more effective than the original program delivered on weekdays for all treatment groups, with initially lower achieving children showing the greatest gains.
- Our results suggest that differentiating the timing of text messaging programs to reflect the heterogeneity of the parent and student population makes sense. Sending text messages to parents during the weekend is generally more beneficial to children's skill development, especially for initially lower performing students who are working on less advanced skills. However, weekend texts may not be as effective as weekday texts for initially higher performing students working on more advanced skills.

low-cost and easily scalable programs are flexible enough to be differentiated in a variety of ways, such as through content, frequency, and timing.

In three prior studies, we have evaluated the effectiveness of text messaging programs delivered on weekdays and tried to understand the mechanisms underlying our programs' success. In the first study, we piloted a texting

intervention (now called Tips-by-Text) that targeted early literacy skills with preschool families. In this original version of our program, parents received three texts per week focused on building a variety of pre-literacy skills. On Mondays, parents received a FACT text designed to explain the importance of the week's skill. On Wednesdays, they received a TIP text describing specific activities parents could do with their children to build that skill. Finally, on Fridays parents received a GROWTH text, providing them with positive reinforcement and a follow-up tip. Results of the randomized controlled trial showed that the program positively affected parenting practices and translated into student learning gains, and that these effects were strongest for children with lower pre-program assessment scores.

In our second study, we tested whether these improvements were driven by the actual content of the texts, or whether the program's benefits were driven solely by the fact that participants were receiving frequent reminders (or "nudges") about parenting. We found that targeting texts based on skill level improved student results, and that academic effects were particularly pronounced for students further from average levels of baseline development. These results indicated that content mattered and texts were not serving simply as reminders.

Finally, in our third study we assessed how the frequency of the text messages affected results and investigated whether parents benefited from just actionable advice, or also from texts that offered information and encouragement. In that study, we compared our original three-times-per-week weekday program to a program with only one "TIP" on Wednesday, and also to a program that added two additional "TIP" messages on Tuesday and Thursday, for a total of five texts per week. Our findings demonstrated that text messaging programs can supply too little or too much information. Parents preferred the three-text-per-week model to the other options and the children scoring in the lowest quartile before the intervention benefited from receiving three texts per week. Higher scoring children did not show literacy gains from receiving more than one text per week, and neither parents nor children benefited from receiving five texts each week.

These previous studies provide evidence that program design matters with regard to text content and frequency. In this study, we delve deeper to investigate how the timing of our text messaging impacts the effectiveness of our program. Specifically, we analyze whether sending messages on weekends is more beneficial, on average,

than sending weekday messages. We ask whether parents have more time, bandwidth, and inclination on weekends to interact with their children and implement beneficial parenting practices, or whether parents are more likely to use our texting support after work on weekdays. We also examine whether the answers to these questions depend on the parent population receiving the texts.

THE PROGRAM

To assess how timing affects the results of our text messaging program, we conducted a randomized control trial with the parents of four-year-old pre-kindergarten students in Dallas during the 2016-2017 academic year.

We randomly assigned parents into three treatment groups. The first group received the original three-text-a-week program on alternating weekdays — Monday, Wednesday and Friday. The second group received the same FACT, TIP, and GROWTH messages on Friday, Saturday, and Sunday. Because the second group received texts on consecutive days and we wanted to be able to distinguish which program effects were due to time of week as opposed to spacing of texts, a third group of parents received the same three text messages on Tuesday, Wednesday and Thursday, giving us additional data to assess which factors were in play.

THE STUDY

Approximately 12,000 pre-kindergarten students are enrolled in 132 preschools in the Dallas Independent School District. Ninety-three percent of these racially and linguistically diverse students are economically disadvantaged and fifty-three percent have limited English proficiency. On average, their parents have relatively low levels of educational attainment, with thirty-two percent having less than a high school degree, thirty-two percent having a high school degree, and only twenty-eight percent having completed at least some college.

We recruited parents through the district's existing registration process. While parents were enrolling their children for pre-kindergarten, they were invited to participate in this study. They could choose to receive text messages in either English or Spanish and had the option to withdraw from the study at any time during the school year. 4,419 parents decided to join our study and were randomly assigned to one of our three treatment groups or to our control group.

Our analysis draws on extensive descriptive and demographic data about the participating parents, teachers, and children. Parent information comes from enrollment forms, our texting platform, and end-of-year surveys. Teacher information comes from administrative records, and includes data about length of experience and absences. Child information also comes from administrative records, which include thrice-yearly literacy and math assessment scores. Because the first literacy and math assessments were administered to the children before the texting program began, it serves as our baseline measure of pre-intervention skills. The third literacy and math assessment, conducted towards the end of the program, serves as our primary child outcome.

CONCLUSION

This study addresses the question of when parenting support works best in an early childhood text-messaging experiment. We compared three identical programs aimed at improving parent-child interactions and building pre-kindergarten skills, sent on different days of the week. The goal was to assess whether the program was more useful to parents on busy and challenging weekdays, or on days that parents are more likely to be free, such as weekends. Our results suggest that sending the text messages on weekends is more effective at improving children's literacy and math skills than sending the texts during the week. These results were driven by the gains made by the initially lower performing students.

We found weaker evidence that sending a texting program on weekends may be less effective than the weekday program for initially higher performing students. The results provide evidence that the timing of parenting support programs matters, and that different groups of parents and students may benefit from receiving support at different times.

Although we did not categorize parents based on their work hours and other competing demands, we used their children's scores on the initial pre-intervention literacy and math assessment as a rough indication of which parents faced greater challenges in supporting their children, and which parents had lighter cognitive loads and were better able to engage in effective parenting practices. Our results bore out our initial hypothesis that parents of lower achieving students may face such high barriers during weekdays that a texting intervention is not enough to overcome these hurdles and prompt regular skill-building activities. Conversely, for parents of higher

achieving students, weekday texts may be more effective because, although working with children on weekdays is challenging, these parents can still find the time and summon the focus to take advantage of the text message support.

Text messaging programs are flexible and light-touch, so program modification is relatively easy. Our previous findings highlighted the benefits of differentiating program content based on a child's skill level. This study shows that differentiating program delivery time based on parental availability, understood broadly to encompass cognitive load and attention, is also a promising avenue for refining and improving program design

RELATED PUBLICATIONS

Cortes, K., Fricke, H., Loeb, S. Song, D., and York, B., (Forthcoming), "Too Little or too Much? Actionable Advice in an Early Childhood Text Messaging Experiment" *Education Finance and Policy* (NBER working paper 27827).

Doss, C. Fahle, E.M., Loeb, S. & York, B.N. (2019). "More than Just a Nudge: Supporting Kindergarten Parents with Differentiated and Personalized Text-Messages." *Journal of Human Resources*, 54(3), 567-603.

York, B. Loeb, S. & Doss, C. (2019). "One Step at a Time: The Effects of an Early Literacy Text Messaging Program for Parents of Preschoolers." *Journal of Human Resources*, 54(3), 537-566.